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The Folklore of the Geoponica

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COLLECTANEA.

THE FOLKLORE OF THE GEOPONICA.

THERE has come down to us from the tenth century A.D. a curious and interesting collection of precepts on farming and other country pursuits, including stock-breeding and fishing, collectively known as the Geoponica. As it stands it is the work of some Byzantine, who dedicated it to a certain "most righteous emperor Konstantinos," apparently that mild and amiable, if not very able monarch Constantine VII, Porphyrogennetos. The dedication was therefore written somewhere in the neighbourhood of 950. But the editor's work was little more than a moderate use of the Byzantine equivalent of scissors and paste, and even in that he had been preceded by one Cassianus Bassus, who in the sixth century compiled what he called *περὶ γεωργίας ἐκλογαί*, or extracts on agriculture, which he dedicated to his son. The nameless tenth-century editor probably made excerpts, or epitomes, from a damaged copy of these excerpts, and the result is twenty books of unequal length, filling altogether 529 Teubner pages and covering, in an unsystematic way, the subjects of weather-signs, general directions for the choice and arrangement of an estate and the seasons at which various sorts of work should be done, a long account of the cultivation of vines and the preparation of wine, a treatise on the olive and the uses of olive-oil, long sections on fruit-trees, shrubs, herbs and flowers, a discussion of insect and other pests and the best means of getting rid of them, and advice on raising pigeons and other birds, including domestic fowl, on bee-keeping, the breeding

of large and small cattle and their treatment in health and sickness, on dogs and swine, and finally directions for the best kind of baits to catch various sorts of fish, and to end all a recipe for *garum* or *liquamen*, a favourite sauce prepared from brine and odds and ends of fish.

Cassianus seems at first sight to have read pretty widely, if uncritically, to make his scrap-book, and in consequence we have a very considerable number of excerpts from authors, chiefly of Hellenistic or Roman date, whose works are now lost to us. These include the Quintilii, who died A.D. 182; Florentinus, the most important writer on agriculture of the third century of our era; a certain Sotion, of whom we know nothing; and various others,¹ including some who never wrote anything, such as Pythagoras, or whose works were kindly written for them by admiring posterity, such as Zoroaster and Demokritos.² Cassianus had not studied all these authorities himself, however, but seems to have drawn upon a tolerably scientific treatise on agriculture by Vindanius Anatolius of Berytos, in twelve books, and another work in fifteen books by Didymos (not the great grammarian but a much later namesake), who was much inclined to study and believe in magic. Both these worthies flourished in the fourth Christian century, and their reading had been fairly extensive.

¹ For a list, with some references to further discussions of individual authors elsewhere, see the art. *Geoponica* in Pauly-Wissowa, *Realencyclopädie*, by Oder. Cf. E. Fehrle, in *Sitzungsberichte d. Heidelberger Akademie d. Wissenschaften, Philos.-hist. Klasse*, 1920, No. 11.

² As Zarathustra was reputedly the founder of the Magian religion, he was held in high esteem as a magician, and his name forged to many books of late date. The same doubtful compliment was paid to Moses. The real Demokritos, Plato's contemporary, was as far removed from dabbling in magic as one would expect from the originator of the atomic theory. The supposed extracts from his works which treat of magic, sympathy and antipathy, and such-like favourite doctrines of an age much later and less critical than his own, have been referred, not without plausibility, to a certain Bolos Demokritos or Demokriteios of Mendes obviously an author of the Alexandrian period; see J. Röhr, *Philologus*, Supplementband xvii, Heft 1, p. 56.

Hence we have, among other things, a curious mixture of paganism and Christianity running through the book. Thus, the farm-bailiff as described in ii. 44 will be a rather broad-minded individual, for on the one hand he will show a decent reverence for consecrated trees and for monthly festivals, both of which are pure pagan, while on the other he will oblige his labourers to rest "on the idle day of the week," *i.e.* will see that they keep Sunday, or possibly, though I think this less likely, the Jewish Sabbath. It is not, therefore, to be wondered at that in the numerous magical formulæ Homer and the Bible are drawn upon to furnish charms while the Mother of the Gods and Yahweh alike serve as names of power.

But, Christian or pagan, the sources of this interesting compilation are without exception learned. There is no hint³ that either Cassianus or his later excerptor ever talked with farm labourers or peasants to find out what their beliefs and customs were. For superstitions as well as for methods of pruning vines or grafting olives, they went primarily to books. This is of considerable importance, for, as any folklorist reading this article will see for himself, a good deal of what they say can be paralleled from modern rustic ideas. It is one proof the more that a vast proportion of what we call folklore is not really originated by the folk, but has filtered down to them from men of greater learning, if not greater sense. The country belief which we smiled at yesterday and hasten to collect to-day because to-morrow it may be gone for ever is likely enough to be the science of a century or a millennium ago.

³ There are it is true fairly numerous passages in which something is said to be known "from experience"; but it is the "experience" of one of the authors cited by Cassianus, or Cassianus' sources, or, it may well be, of some one cited in turn by one of them. Vindanius not infrequently appeals to experiments carried out by himself on his own estate; but, as he seems to have been a good practical farmer, these passages are of interest rather to the historian of agriculture than to the folklorist as such.

Miscellaneous in its content and its religious views, the *Geoponica* is no less so in the character of its precepts. Much of what it tells us is really sound sense and good counsel, if we have regard to the time and place for which its precepts are intended. The climate is that of Constantinople, or one like it⁴: hence the hay harvest is to be got in during the month of June and dried in the shade⁵; cherries will ripen in the spring⁶; but it is not quite hot enough for citrons,⁷ although vines capable of yielding good wine-grapes will grow freely. The ancients were great cultivators of the soil, and their writers often country-bred men who knew what they were talking about when they wrote on ploughing and sowing; while from early Alexandrian days onwards the townsmen often found it modish to take an interest in rustic affairs which did not always stop short at introducing a picturesque shepherd or a virtuous or comically stupid peasant into poems or romances. But their science and pseudo-science seem in turn to have reacted on agriculture, and many processes described in these pages, if they were actually carried out, as they may very possibly have been, owe their origin to the wide-spread and learned doctrines of sympathy and antipathy,⁸ astrology and so forth; while mixed with much sound and practical advice on the rearing of beasts is some very quaint natural history, as quaint almost as the doctrines concerning the nature and virtues of herbs which diversify the advice on how to grow them.

It seems, therefore, well worth while, in the interests of folklore, to extract, with some brief comment, those items which are obviously of magico-religious interest, or which spring from pseudo-scientific doctrines concerning organic life. My list makes no pretence to being anything more

⁴ *Geop.* xii. index *a'* and title of chap. 2. ⁵ iii. 6, 7. ⁶ iv. 12, 5.

⁷ x. 7, 1-11. They are to be planted close to a wall which will shelter them from the north wind, and covered with mats, etc., in winter.

⁸ For this doctrine, see Röhr, *op. cit.*, pp. 34-76.

than a first provisional sketch. One of the desiderata both of classical scholarship and of anthropology is a really good and full edition of the *Geoponica*, somewhat on the lines of Frazer's *Fasti*. This ought to contain a revised critical text, for that of Beekh, in the Teubner series, is by no means faultless⁹; with this might well go a translation into some modern language, preferably one of the three best known; a commentary, zoological, botanical and anthropological; a critical essay on the sources of the work and its stages of growth and decay; and finally a series of indices. If ever a scholar, or group of scholars, have the time and inclination to perform this service to learning, the folklorist will be one of those who may justly thank him, or them. I would also remark that I have the misfortune to be ignorant of botany, and have to thank my colleague, Professor R. A. Robertson, for enlightening me on this part of my subject.

1. *Weather-signs: astrology.*

The first book, and sundry passages in the others, deal with weather-signs and the influence of the heavenly bodies, especially the moon, to which the ancient farmer paid, or was expected to pay, no small attention. Of the weather-signs which fill the second, third and fourth chapters I need say little; they profess to be taken from Aratos, and really coincide with him for the most part, some divergencies being explicable, at least in my opinion, as mere misinterpretations of his language.¹⁰ I need not trouble, therefore, to set

⁹ See Fehrle, *op. cit.*, for criticisms and suggestions.

¹⁰ I note i. 2, 2, which says that when a little cloud appears before the sun rises, it denotes fine weather; but Aratos, *Phainom.*, 845, says it means rain (μηδ' . . . ἀμνηστέειν ὑετοῖο). Careless reading of the passage is perhaps to blame. Again, i. 3, 2, says that when a cloud appears to the left of the sun as he sets rain may be expected immediately; Aratos, 854, says nothing about the cloud being to the left of the sun, but merely "if a cloud shadows (ὑποσκιάησι) the sun." The verb, mis-copied or misread, may have been taken to be somehow connected with σκαῖός, "left," and paraphrased accordingly. I. 3, 10 says that if

down what may be conveniently read in Aratos himself, or the Loeb translation of him. But some few signs are from another source, and one of them is an example of the widespread notion of "governing days." I. 5, 3, says, citing Demokritos and Apuleius as its authorities, that "the winter will be like that feast day which the Romans call Bruma, that is to say the 24th of the month Dios, or November." Others say, the author adds, that the 24th, 25th and 26th of November govern December, January and February respectively, but this is not reliable. Others, again, are of opinion that the weather always turns colder from the seventh to the fourteenth of March, because it was during those days that the Forty Martyrs were exposed to the frost.¹¹

But the moon bulks largest in this as in many other contexts. "Some," says Diophanes, cited in i. 6, "advise that nothing should be planted while the moon is waning, but always while she is waxing. Others tell us to plant from the fourth to the eighteenth day of the moon; others again, only in the pre-lunar days, that is to say the first three days after the birth of the moon; yet others are of opinion that one should plant nothing from the tenth to the twentieth day, lest her light should be buried with the plants. But the exact doctrine and the best concerning the above observations is this: plant when the moon is under the earth and cut timber when she is above it." Accordingly, the next chapter is a table of the times when the moon is below or above the earth, the author being, if you will believe the chapter-heading, no less a person than Zarathustra. Scattered through other books of the *Geoponica* are many more pieces of similar advice: thus, ii. 14, 7 cattle look to the south it will rain; but Aratos, 1182, says north; this is repeated, correctly, in i. 4, 3.

¹¹ For brevity's sake, most quotations from the *Geop.* are not literally translated, but epitomised in English; those in quotation marks are translated in full.—For the Forty Martyrs, said to be soldiers put to death by the Emperor Licinius, and their cult near Constantinople, see Sozomenos, *Hist. Eccl.*, ix. 2.

quotes "some people" as advising that seeds should be planted from the fourth to the fifteenth day of the moon; ii. 21, 12, attributed to the Quintilii, dissuades from manuring while the moon is waxing, as this tends to make weeds grow; ii. 35, 7 reports that "they say the bean, if nibbled" (by insects, presumably) "will make up the loss again as the moon waxes." The waxing of the moon, again, is the time for planting "vines, trees of all sorts, and lilies" (iii. 2, 5); but Florentinus is of opinion that vines and trees ought to be planted while the moon is under the earth, and that if you want them vigorous, but not tall, the wane is the best time (x. 2, 13). The effect of the moonlight on grapes is merely to ripen them, because the moon is warm and moist; the night air gives them sweetness, but does nothing else for them, and only the sun can both sweeten and strengthen them, say the Quintilii (vii. 1, 2). The best time for planting pistachios is the second day of the moon, according to Paxamos (x. 12, 3). Anatolios, while citing authorities for planting vines in the waxing moon, or in the dark of the moon, says that he himself has planted in the wane and got good results (v. 10). All this is in accordance with the general ancient belief that between the moon and all growing things there existed a sympathy of some kind.¹² A quainter bit of information is the following: look at the new moon and swear by her not to eat *seris* (a kind of chicory) nor horseflesh for thirty days and your teeth will not ache in that time. For this Didymos vouches (xii. 28, 3); I do not know a parallel.

¹² Examples of this idea are legion; I give a few only. Eggs should be set at new moon, Varro, *de re rust.*, iii. 9, 16 (cf. Geop. xiv. 7, 13; 18, 6); timber should be felled in the wane, Cicero, *de divin.*, ii. 33; to get plenty of honey, take it at the full moon, Pliny, *N.H.*, xi. 38; the index to Sillig's edition of Pliny will give many more illustrations. It affects ripening and rotting alike, Athenaios, 276 d. Shellfish vary in size with the moon, Lucilius 1201 Marx, see his note, and cf. Manilius, *Astron.*, ii. 93, Athen. 74 c. It is to be noted that none of these authors is early enough to precede the introduction of astrology into the classical world (about the time of Alexander).

Opinions seem to have differed as to the best time for felling timber. Varro and the Quintilli are cited (iii. 1, 2) in favour of January, on a day when the moon is in conjunction with the sun and below the earth, "because moon-light softens timber"; if wood be cut in accordance with these directions it will not decay. But elsewhere (iii. 10, 4) we are told that it may, at a pinch, be cut in July, "of course with the moon on the wane and under the earth." Grapes for storage should be gathered "after full moon," iv. 15, 1. The wane is the time to cut slips for grafting, because they are stronger then (iv. 12, 20; x. 75, 14); to get rid of dog's-tooth grass, plough it up in May, let it dry and take it away when the moon is sixteen days old, in other words just at the full, "for the antipathy (of the moon for this weed) will contribute towards preventing it growing up again" (xii. 28, 3). Garlic will not smell badly if it is both planted and gathered when the moon is below the earth (xii. 30, 9). "Zoroaster" again is of opinion that at vintage-time the moon should be in Cancer, Leo, Libra, Scorpio, Capricornus or Aquarius, and that at anyrate she should be on the wane and under the earth when the grapes are gathered (v. 36).

This, it will be seen, passes into astrology pure and simple, of which there are other examples. As I am not discussing astrology, nor any of the complicated forms of technical divination (*ἱντεχνος μαντική*) which were popular in late antiquity especially, I give only one or two samples of this part of the Geoponica. I. 8 is a series of predictions based on the position of the moon in the zodiac when the Dog-star rises; e.g. i. 8, 2, if she is in Leo there will be good harvests of corn, wine and oil and general cheapness and plenty. I. 10 is concerned with astrological brontoscopy, or divination from thunder; thus, if it thunders when the moon is in Taurus, there will be failure of cereal harvests, locusts, and distress and famine in the east, but rejoicing in the Imperial court (i. 10, 3). I. 12, another reputed work of Zarathustra,

gives predictions as to the weather and harvests drawn from the position of the planet Jupiter.

2. *Weather-magic.*

More to the point is the weather-magic against hail in chapters 14 and 15 of the same book. They cite as their chief authority Julius Africanus, whose *Κεστοὶ* dealt, says Suidas,¹³ with "cures wrought by formulæ, charms and written characters, and other kinds of potencies; a sort of natural magic." One editor of the *Geoponica*, not the latest, to judge by the rhythm of his Greek, protests against the credulity or worse shown by believers in this sort of thing; another, with admirable impartiality, copies his protest and then adds another charm. The hail is dealt with in three ways. It may be shown something which will disgust or frighten it: the genital organs of a menstruating woman, or a cloth stained with the first menstrual blood of a virgin (14, 1, 2), or a mirror to reflect its own ugly looks (*ibid.* 4), or wooden figures of bulls to threaten it with their horns (*ibid.* 7). Or something antipathetic to it may be used; the hide of a seal may be cut in strips and hung from a conspicuous vine (3, cf. v. 33, 8), or merely carried around the vineyard to enclose it in a magic circle; for this latter purpose the hide of a hyena or crocodile will do as well (*ibid.* 5); or a number of keys may be hung up on strings all around the vineyard (to lock the hail out? 6); or a live fresh-water tortoise may be carried, upside-down, in the right hand, around the vineyard, then laid on its back in the middle of the ground, with a little earth piled about it to prevent its getting away; some say that this should be done either at mid-day or midnight; or strips of hippopotamus-hide may be laid on the boundaries of the place (8; 9; 12). Or, as recommended by Apuleius (10), a picture of a bunch of grapes may be consecrated in the vine-

¹³ Suid., s.u. Ἀφρικανὸς ὁ Σέξρος. For an excellent discussion of the sort of charms mentioned here, see W. Fiedeler, *Antiker Wetterzauber*, Kohlhammer, Stuttgart, 1931.

yard at the setting of Lyra (early in February) ; this clearly is to secure the aid of whatever deity the picture is consecrated to.¹⁴ Thunderbolts can likewise be kept away by burying hippopotamus-hide inside the place to be protected (i. 16).

3. *Written charms.*

This brings us to the abundant stores of magic to be found in this work. A few formulæ to be pronounced over, or written and attached to the object needing protection, show a delightful impartiality in their use of Christian, or Jewish, and pagan material. To keep wine from souring, "write upon the vessel or store-jars these divine words, O taste and see that the Lord is good" (Ps. 34/5, 8) ; vii. 14. Among the many ways of preventing drunkenness is the recitation of the Homeric verse "And thrice did Zeus the Counsellor thunder from Ida's height."¹⁵ As thunder sours wine (Geop. vii. 10 and 11), it may perhaps be supposed inimical to drunkenness also, hence the mention of it in the charm. One of the editors, in telling a story of how the olive became sacred to Athena, mentions a charm for headache ; all that is necessary is to write the name of the goddess on an olive leaf and then tie it to the head with a piece of string (ix. 1, 5). The most delightful written charm, however, deals with field-mice. To get rid of them, take a piece of paper and write on it, "I adjure you mice that are found here, do me no wrong yourselves and suffer none other to wrong me ; for I give you such-and-such a piece of land (naming it). But if I find you here again, I will take the Mother of the Gods with me and will cut you into seven pieces." This notice is to be posted up, with the writing outermost, on an unwrought stone in the place infested with the mice, before sunrise.^{15a} The editor adds, "I have written this down so as

¹⁴ There is another magical process in i. 15, but unfortunately the text is so corrupt as to be unintelligible.

¹⁵ *Iliad*, viii. 170.

^{15a} Leo Allatius, *de quorundam Graecorum opinionibus*, 29 (pub. 1645)

not to seem to have omitted anything ; but I do not believe all such things, heaven forbid ! and I give the same advice to all, to pay no attention to such ridiculous stuff." (xiii. 5, 4-6). To prevent serpents from molesting a dovecote, write on its four corners and on its windows, if it has any, the name Adam (xiii. 8, 4 ; xiv. 5, 1). This would seem to connect with the play on the name of Adam in St. Augustine,¹⁶ who assures his hearers that it signifies the whole world, since it is an acrostic of the Greek names of the four cardinal points (ἀνατολή, δύσις, ἄρκτος, μεσημβρία). A field will prosper if the ploughshare with which it is ploughed is inscribed φρνήλ. This seems to be Hebrew, possibly פְּרִי־אֵל, *phri El*, "fruit of God," as my colleague Professor N. W. Porteous suggests to me. Hebrew again, or rather Greek translated from Hebrew, is the charm recommended in x. 87, 8 ; to prevent a tree casting its fruit, write and attach to it Ps. i. 3, in the LXX version. But the very same chapter has (6) a Homeric line which may be used in the same way to the same end, viz. *Iliad*, v. 387, "and in a jar of bronze was bound a twelvemonth and a moon." Finally, a killing ground-bait, sure to attract fish from all quarters in a marvellous manner, may be made by taking three small shell-fish (λοπάδια, here perhaps limpets or the like) from the rocks, squeezing out their flesh and writing with the juice of it on a potsherd (or one of their shells, the Greek being ὄστρακον, which can mean either) the words Iao Sabaoth. "This name the Fish-Eaters use" adds the author, apparently meaning the Ichthyophagoi¹⁷ of the east coast of Africa (xx. 18).

has heard of people who get rid of caterpillars by citing them before a court of law.

¹⁶ In *euangelium Iohannis tract.* ix. 14 ; x. 12.

¹⁷ For these, see *Periplus maris Erythraei*, 4 (Müller, *Geographi Graeci minores*, I. p. 261, 3). They are near certain small sandy islands, "intellege insulas quae nunc uocantur *archipel de Dahalac*," says Müller in his note.

4. *Agricultural magic and ritual.*

(a) *Seeds.* Farming has always and everywhere been a tricky business, and it is not to be wondered at if, as the savage or barbarian agriculturalist has his ritual, so also these learned farmers have their learned practices. Of sowing-magic there is a good deal ; the eighteenth and nineteenth chapters of Bk. ii are largely concerned with it. After giving several recipes for preparing the seed by soaking or sprinkling it with preparations intended to keep off vermin and birds, the author (at this point Africanus) goes on to assert that it is best to use φυσικά, which may be freely rendered " natural magic." If the seed be kept for some days before sowing in a measure wrapped with a hyena's hide it will acquire both the smell and the natural virtue of the beast, and thus be insured against damage (ii. 18, 8). Or a semi-magical scarecrow may serve ; sow near by the field a little corn mixed with hellebore ; the birds will eat this and be poisoned. Take some of the dead birds and hang them in the field and it will be impossible for the rest to enter (9). Elsewhere (xiv. 25, 1) this is rationalised ; the other birds will suppose there are snares about, and so keep away. The seed will cover a larger area if it be sifted, not through an ordinary sieve, but through the hide of a wolf pierced with holes large enough to insert one's finger (ii. 19, 5). Great care must be taken not to let any of the seed touch the plough-ox's horn, " for such seeds are called horn-cast (κεράσβολα) by some, and they allege that such seeds are infertile and imperfect to such an extent that even the power of fire will not soften them " (ii. 19, 4 ; cf. xv. 1, 27).¹⁸ A border-line case is the direction to soak the

¹⁸ For κεράσβολα σπέρματα see Liddell and Scott, ed. 9, s.u. It is commonly accented κερασβόλα, and this is possible ; the word would then mean " horn-hitting." I prefer, however, to give it the passive accentuation, as above, to make it mean either " hit by the horn " or " cast by the horn." The word, and so presumably the belief, is as old as Theophrastos (end of the fourth century B.C.). It is a plain case of sympathetic magic, the seeds becoming hard like the horn they have touched.

seed, in this case hazel-nuts, for five days in the urine of an innocent child (x. 64, 2).

(b) *Weeds*. That weeds must be pulled up or otherwise got rid of if "our sustaining corn" is to thrive, is a very old piece of knowledge. But magical methods of dealing with the matter seem to have been in favour at least with some of the ancients. Here again, popular magic is reinforced by pseudo-scientific means. Most curious are the methods for getting rid of dodder, which is attacked on its weakest side, namely its known name, *ὄσπρολέων* ("lion-pulse") or *λεόντειος πόα* ("lion's grass"). The simplest plan is to plant "rose-laurel," whatever exactly that may be, possibly rhododendron, in the four corners of the field and also in the middle. This plant had a great reputation as a destroyer of various sorts of vermin,¹⁹ and possibly it was felt that it should also destroy a plant with the name of a beast unfriendly to man. But a more direct assault can be made by drawing a picture in chalk on five potsherds of Herakles strangling a lion, and putting one of these at each of the same five points. If this is done, the weed will never appear at all. Yet another cure, "depending on natural magic and antipathy" is as follows. A marriageable girl must strip completely naked and let down her hair; she must then take a cock in her hands and circumambulate the place; the weed will at once disappear, "perhaps," says the author sagely, "because this lion-weed fears the cock," which, it is well known, lions are much afraid of.²⁰ A variation of this same method is to sprinkle the field with the blood of a cock; while another method again is to make a picture of Iabo (or Iako; the reading is uncertain), apparently another attempt at the name of Yahweh, on a potsherd and bury it in the middle of the ground (ii. 42).

¹⁹ See *Geop.*, xiii. 5, 3 (poisons mice); 12, 3 (keeps them away from cattle); 15, 1, 3 (against fleas).

²⁰ *Geop.* xv. 1, 9; Pliny, *N.H.*, viii. 52, x. 48, xxix. 78 (chicken soup will keep off both lions and panthers, especially if flavoured with garlic); Aelian, *de nat. anim.* iii. 31.

(c) *Vermin*. Both corn and wine, to say nothing of the minor crops, were infested, then as now, by all manner of small organisms, against which constant war had to be waged. A considerable proportion of the methods used were rational enough, including fumigations of various kinds, soaking of the seed in preparations capable of destroying fungus-spores, and so on; but others deserve attention here. Vines will have no insects breeding in their leaves if the bark, or the pruning hook, is rubbed with bear's grease; but no one must know this is being done, or the efficacy of the grease is quite ruined. Properly applied, however, it will protect against frost as well as vermin. Another useful application is garlic²¹ rubbed up in olive oil and smeared on the pruning-knives. Or, if one takes "the caterpillars that are found in roses," boils them in oil, and anoints the pruning-knives with them, this will protect the vines against vermin and hoar-frost alike.²² Other equally useful unguents are goat's fat and frog's blood; or the whetstone on which the knives are sharpened may be smeared with oil and ashes. Finally, vine-shoots burned, made into a paste with vine-sap and wine and placed in the middle of the vineyard will keep off all grubs (v. 30). Any growing plants may be kept safe, "especially from the larger beasts" by the following simple precautions: Take at

²¹ Garlic is of course a great enemy of evil things, from vampires down; it will keep off the vampire-like *strix*, according to Titinius, *frag. incert.* 22 (Ribbeck, *scaenicae Romanorum poesis frag.*³). The recipe in the text is given also v. 48, 6. Garlic hung about a tree or rubbed on the pruning-knife will keep birds off, c. 80. It is rather odd that if planted by roses it will make them smell sweeter, xi. 18, 1. He who eats it will not be hurt by the bite of any noxious creature, xii. 30, 4: see the whole chapter for its medical virtues.

²² This seems to be the same kind of charm as the bird-scarecrow mentioned above, 4 a. Similar is xiii. 16, 1; rub the whetstone with oil in which beetles have been steeped, and no beetles will hurt the vines pruned with knives sharpened on it; xii. 8, 4, to kill caterpillars, take some out of another garden, boil them with dill, and sprinkle the decoc-tion, when cold, on your own garden.

least ten fresh-water crabs ; put them, with water, into a covered jar and stand it in the sun for ten days. Sprinkle whatever you desire to protect daily with this water until it is full-grown "and you will be amazed at its efficacy," says "Demokritos." This is described as "a marvellous piece of natural magic (φυσικὸν) many times tested" (v. 50 ; x. 89).²³ Just on the border-line between rationality and magic is fumigation of the vines with women's hair. Doubtless the resulting gases, containing much ammonia, would have some effect on vermin ; but the reasons for using it savour very little of modern chemistry, for the author assures us that the same fumigation will cure women of miscarrying and upward displacement of the uterus (v. 48, 3). But the Quintilii are of opinion that the very best way to make vermin keep their distance is to plant squills near the vines (ix. 10, 10).²⁴ Again, doubtless some good can be done by smearing those parts of a plant likeliest to be infested by vermin with some pungent substance likely to be distasteful to them, the roots of a tree with bull's gall for instance (x. 18, 9) ; but there is more than this in the recipe for keeping off caterpillars and preventing the fruit from rotting on the tree, by rubbing the trunk with the gall of a green lizard (*ibid.* 7). This kind of gall was also in

²³ For some reason, these crayfish were held in much esteem for magical and medicinal purposes. This recipe is given also, as good against birds, ii. 18, 3 ; a crab hung on a nut-tree will keep it from casting its fruit untimely, x. 87, 2 (here the strength of the crab's grip may be at the root of the practice). Swine will never be ill if they are given nine of these creatures to eat, xix. 7, 1. Finally, the claw of a crab, whether freshwater or not is not specified, is an excellent amulet to keep one from being hurt by wild boars, xix. 8.

²⁴ Squills are very efficacious in medicine and magic alike. To take examples from the *Geoponica* only, apple-trees will not be attacked by grubs if squills are planted around them, x. 18, 2 ; to ensure a like immunity for a fig-tree, put the shoot from which it is grown inside a squill in planting it, x. 46 ; if a fig-tree is scaly, plant squills about its roots and it will recover, x. 50 ; finally, growing pomegranates will not gape open if squills are planted close by, "for they have an antipathy towards them and so will not let them gape," x. 30.

use for preserving the apples in store ; it was to be rubbed on their extremities (x. 21, 12). If grubs, despite all precautions rational or magical, succeed in getting into the trunk of an apple-tree, the correct way to remove them is to dig them out with a bronze nail (x. 18, 10). For pot-herbs, a good way of keeping off vermin is to sow them in a tortoise's shell (xii. 7, 5). The most famous charm is given in xii. 8, 5-6 ; let a menstruous woman, wearing only one garment, barefooted and with her hair loose, walk around and through the garden and all caterpillars will die. This seems to have been a popular method in antiquity, and there is good reason to suppose that it was used even in so respectable a sanctuary as the grove of Anna Perenna at Rome.²⁵ One particular kind of grub, called a *πρασκοκυρίς* or leek-cutter, could be collected and destroyed by burying an unwashed sheep's gut in the ground, "for the creature is fond of filth, and will be caught quickly so." Two applications of this remedy would clear out all of these grubs (xii. 9). This, however, is rather popular natural history than magic.

The entire thirteenth book is devoted to a consideration of noxious creatures. First come locusts (or possibly grasshoppers ; the Greek *ἀκρίδες* is ambiguous). The simplest method (xiii. 1, 2) is to stay indoors, for these considerate insects apparently scorn to take advantage of a deserted

²⁵ Examples of the ancient dread of menstrual blood could easily be multiplied out of such authors as Pliny. For the *Geoponica*, we may cite xii. 20, 5, a menstruous woman must not come near cucumber-beds or the cucumbers will wither, and for the same reason she must not approach growing rue (xii. 25, 2). XVI., 10, 2, a drench containing human urine is recommended for beasts suffering from congestion of the lungs ; but it must not be a menstruating woman's urine. The charm given in the text is well-known from Columella, x. 357 *sqq.*, xi. 3, 64 ; Pliny, *N.H.*, xvii. 266, xxviii. 78 ; Palladius, *de re rustica*, i. 35, 3 ; Aelian, *de nat. anim.*, vi. 36 ; and that it is alluded to by Martial, *epigr.*, iv. 64, 16, was suggested by Schenkl, *Röm. Mitt.*, xxxi. p. 211, approved by Fehrle, *Die kultische Keuschheit*, p. 56, and again suggested independently by the present writer, *Class. Rev.*, xxxviii. p. 64, cf. pp. 111, 171 ; I still think it the only tolerable explanation of the passage in Martial.

estate, and so pass it by. But if this precaution is not taken in time, there are other methods of dealing with them. They will not touch anything that has been sprinkled with bitter lupines or wild gourds boiled in brine, or wormwood, leek or centaury steeped in plain water ; and they will pass by a farm that has bats tied to high trees growing in it. Or, they may be fumigated by burning some of their own number ; this will kill or stupefy the rest ²⁶ ; a similar method is to pickle some of them and pour the pickle into ditches ; if these are visited before sunrise, the remaining locusts will be found in them asleep, and the farmer may kill them by any method he chooses (xiii. 1). The larva of the locust is very easy to guard against ; bury three grains of mustard-seed by the root of each vine, and the smell of the growing mustard will kill the grubs (xiii. 2). Weasels can be got rid of either by laying down poison (the author, at this point Africanus, recommends wheat soaked in *ἄλας ἀμμωνιακόν*, apparently not our sal ammoniac but simply rock salt),²⁷ or by catching one, castrating it and letting it go (xiii. 3). House-mice may be similarly disposed of ; catch one, scalp it and turn it loose and the rest will run away ; equally effective against them is fumigation with hæmatite or tamarisk leaves (xiii. 4, 6 and 8). The method of ridding one's farm of field-mice by a warning notice I have already described. Cats can be prevented from raiding the fowl-run most simply ; it is necessary merely to tie a sprig of wild rue under each fowl's wing (xiii. 6 ; xiv. 15 ; in xiv. 9, 6 Didymos informs his readers that this method is efficacious against foxes and other beasts also, but works much better if a little fox's or cat's gall is mixed with the fowls' food). Snakes receive special attention, as is natural in a country having several venomous species. Pomegranate leaves are inimical to all sorts of vermin, and so form a good protection

²⁶ This is essentially the same kind of charm as that mentioned above, see n. 22.

²⁷ See Berthelot, *Collection des alchimistes grecs*, i. p. 237.

if added to a litter or paille (στράβας), x. 32 ; xiii. 8, 3. A serpent can be paralysed by dropping an ibis' feather on it, and killed by putting oak-leaves on it, or letting a fasting man spit into its mouth. If it is preferred to kill it with a blow from a cane, the striker must be careful to strike but once, for one blow paralyses it, more rouse and restore it (xiii. 8, 5 ; xv. I, 15-16). If it runs away down its hole, the left hand should be used to drag it out again, for it will be pulled in two rather than come out for any tugging with the right hand. It can be kept away in various fashions, for it will not go near anyone who has rubbed himself with the herb *drakonteia* (edder-wort), or with the juice or seeds of radish, or anyone who carries one of these valuable specifics about his person ; it also avoids any place where there is deer's fat, the root of centaury, lignite or dittany. And if it does happen to bite anyone, the root of a rosebush should be hung on him, as he will then recover (xiii. 8).

Against scorpions also radish is very soveran ; rub your hands carefully with its juice, and you may handle live scorpions and other creeping things without fear. This valuable plant will indeed kill a scorpion if laid on it. Furthermore, they may be driven off by catching and burning one of their number, and he who holds in his hand the herb *sideritis* may also hold live scorpions without harm. If one does have the misfortune to be bitten, there are several cures, such as a scorpion boiled in oil and applied to the wound, or the scorpion's mortal enemy the gecko similarly treated. To apply the seal of a silver ring to the wound will do as well ; but if an ass is at hand, the pain may be easily transferred to him by getting on his back, face to tail, or merely saying to him at once " A scorpion has bitten me." As in the case of snake-bite, the root of a rose-bush makes a good amulet (xiii. 9). The same plan of catching and burning one specimen to drive the others away answers for ants (xiii. I, 6 ; IO, I, 13) ; moreover, they are destroyed by any tree which has a " raven-fish " (κορακίνος,

unidentified) hanging from it (xiii. 10, 16). Flies will not settle on horses which have been rubbed with lion's fat (xiii. 12, 4). To get rid of bed-bugs it is well to remember the deadly antipathy between them and leeches, which makes each poisonous to the other. A bed can be thoroughly disinfected by covering it in and then setting leeches alight under the covering (xiii. 14, 7); while if a beast swallows leeches while drinking, it is only necessary to hold crushed or burning bugs under his nose, and he will at once void them (xiii. 17; xvi. 19). But a bed may also be protected, according to Demokritos, by hanging the foot of a hare or deer from the posts at the head of it (xiii. 14, 9). Fleas demand rather more elaborate measures. Put a basin on the floor in the middle of the house; trace a circle around it with a knife made wholly of iron, for choice one with which a man has been killed. Then sprinkle the rest of the house with a decoction of wild grapes or laurel-leaves in brine, and all the fleas will collect in the basin (xiii. 15, 7). Or write something secretly on the outer door of the house before May 15 (the text is defective here and the formula has been lost), *ibid.* 8. Anyone will be personally safe from their attentions if he remembers to say " och, och " on entering any place where they are (*ibid.* 9).

(d) *Some miscellaneous charms.* To sweeten bitter water, pound up coral and throw it in (ii. 5, 14). Lupines, which are a useful plant, if only because they rid a patient of tape-worm if rubbed to a smooth paste and laid on his navel, ought to be left severely alone when once planted; for if they see anyone working in their field, they run away. Capers have the same peculiarity (ii. 39, 7). Perhaps the most interesting charm is that in x. 83, 1-2, for making a barren tree bear. " Gird yourself and take an axe, double or single-bladed. Go angrily towards the tree, as though you would cut it down. Now let someone approach you and beg you not to cut it down, saying that he will guarantee it to bear in future. Pretend to believe him and to spare the

tree. It will then bear freely." It is to be noted that the Parable of the Barren Fig-tree (Luke xiii. 6) assumes the existence of this very custom. To insure that a garden shall be fertile, bury an ass's skull in the middle of it (xii. 6).

5. *The fowl-run.*

Not much magic appears to have been used in this part of the farm. However, an iron nail is recommended as a valuable addition to the litter put down for the hens to lay on, "for this (iron) is thought to be a protection against all manner of evil" (xiv. 7, 11, cf. xiv. 11, 4). A clutch of eggs—the maximum is given as twenty-three²⁸—should always be an odd number, and the hen should be set in the waxing of the moon, between the first and the fourteenth days; "eggs that are put under the hen before the new moon are spoiled" (*ibid.* 13). The rule about an odd-numbered clutch applies also to pea-hens, who should be given five eggs of their own and four hen's eggs to sit on, the latter, since they hatch sooner, being renewed after ten days, so that both the chicks and the young peafowl shall hatch out on the thirtieth day. The proper time to set the pea-hen is the ninth day of the moon (xiv. 18, 6-7).

6. *The apiary.*

Bees have been from early times the objects of much interested speculation; hence one is not surprised to read that, while generally ill-tempered and apt to attack those who approach their hives, they are especially so to any who smell of myrrh or wine, and to all women, but in particular those who have known man (xv. 2, 19). The usual ancient tales about them are repeated, as regards their wisdom and political sense, their loyalty to their "king," their fondness

²⁸ The number, to judge by modern experience, seems absurdly large, but it is confirmed by Varro, *de re rustica*, iii. 9, 8, a passage closely connected with this one, who says "not more than 25," and Pliny, *N.H.*, x. 150, who quotes Varro. Ancient eggs were probably much smaller than modern ones.

for music and the possibility of breeding them from the carcass of an ox (xv. 3 ; 2, 21 *sqq.*, citing Juba and Varro).²⁹ Practical advice concerning their management includes the statements that they will never desert the hive if it be rubbed about the entrance with the dung of a cow which has just had her first calf (xv. 4, 1), and that the best way to keep bee-hives, or any farm building, from evil magic is to bury under the entrance the off fore-hoof of a black ass and pour upon it liquid pine-resin which has not been heated, salt, and Herakleotic sage (xv. 8, 1). Also we have the familiar laudation of honey as a preservative of life ; especially, if the old wish to live on, they should resort to a diet of bread and honey only (xv. 7, 5). Most if not all of this is perfectly familiar and was handed on from one naturalist or writer on agriculture to another.

7. Stock-breeding.

Beasts and their behaviour in health and disease have always been a favourite subject for popular and pseudo-scientific conjectures. Hence it is not surprising to find several curious bits of information in those books of the *Geoponica* which deal with stock-breeding. Neither a horse nor a cow will ail if a stag's horn is hung on it as an amulet (xvi. 1, 17 ; 3, 6). Plough-oxen will not tire if their horns are rubbed with olive-oil and turpentine boiled together (xvi. 9). An ox may be prevented from swallowing a bone with its food by hanging a wolf's tail on the manger (xvi. 13, 2). The number of a flock of sheep ought always to be odd, " since this has a natural virtue tending to the safety and permanence of the flock " (xvi. 2, 8). Sheep will follow their shepherd if he stops their ears with wool (xviii. 4 ; in

²⁹ The most famous passage dealing with this belief, which seems to have been taken quite seriously by many well informed persons in antiquity, is Vergil, *Georg.*, iv. 281 *sqq.* For a discussion of it, see E. S. McCartney in *Trans. Amer. Philol. Ass.*, li. (1920), p. 106. The fact underlying it is the resemblance of the fly *Eristalis tenax*, which lays its eggs in carrion, to a bee.

Greece and the Near East, sheep and goats are, of course, led, not driven, cf. *e.g.* John x. 27). Lambs will not ail if they are fed for seven days on ivy (xviii. 7). She-goats will give plenty of milk if dittany is hung about their bellies (xviii. 10, 2).³⁰ Buttering a cat's paws does not seem to have been an ancient device, but there is a very similar one for making a dog stay at home. "If you would have your dog not run away," says Fronto, "spread butter on a piece of bread and give it him to lick; or else measure him from head to tail with a green reed" (xix. 2, 16). It would appear also that there was no objection to giving a sheep-dog mutton-bones, or at least broth made from them (xix. 1, 6); the only precept in this connection is the common-sense one that he must not be allowed to tear the carcass of any sheep which dies (xix. 2, 13). A he-goat will not stray if his beard is shaved off (xviii. 9, 5).

Wolves were still the standing menace to all herdsmen, and a good deal is said about the best ways of dealing with them. As an amulet, a squill hung on the bell-wether is recommended as efficacious to make them keep away (xviii. 17, 8). I have already said something of the virtues of squills, above, n. 24. But the most elaborate and interesting process is that recommended by Diophanes for the extermination of wolves, in xviii. 14, as follows:

"There are certain small sea-fish, known as *blennoi*, which some call 'wolves'; these will bring about the capture of land-wolves in this manner. Catch a large number of them alive and pound them small in a mortar. Now make a very large bonfire on the mountain in which the wolves live (on a windy day, of course), take some of these fish and lay them on the fire; mix thoroughly together the

³⁰ Dittany (*δίκταμνον*, *Origanum Dictamnus*), was highly regarded, at least in popular belief, as a remedy for goats; see Theophrastos, *Hist. Plant.*, ix. 16, 1; if a goat is wounded with an arrow and eats dittany, the arrow falls out. Cf. Verg., *Aen.*, xii. 412 *sqq.*, with the note of Servius auctus. It is efficacious likewise to make ewes give plenty of milk, Geop., xviii. 12, 1.

juices from the fish and lamb cut up small and put it on the fire along with the pounded fish ; then go away. The fire will smell strongly, and all the wolves in the neighbourhood will thus be attracted ; when they take any of the meat, or smell the odour, they will be made dizzy and fall asleep, and when you find them thus, as it were, paralysed, kill them."

It is pretty obvious magic, though of a learned kind. The wolves are to be attracted into an artificial atmosphere of dead " wolf," and overpowered with the odour of their own death. They are magically dead as soon as they come near the bonfire, and the bodily killing is a matter of detail.

The breeding season had its special pieces of magic. It would appear that male corresponded to the right hand and to the north, female to the left hand and the south. So, if the bull, leaving the cow he has mounted, turned to the right, her calf would be male, if to the left, female ; the sex could be controlled by tying the right testicle if heifer-calves were wanted, the left if bull-calves ; or more simply, by bringing the bull to the cow when the wind was in the north or the south according as the offspring was to be male or female. All this was held to apply to sheep, and indeed to all beasts (xvii. 6 ; xviii. 3, 6-7). " Some have a more elaborate method," says Apsyrtos (xvi. 21, 9) ; " they cover the male, whether he-ass, stallion or other, with a rug of the colour they wish the young to be." A lamb would be white, black or piebald according to the colour of the ewe's tongue (xviii. 6). If necessary, an aphrodisiac could be made by burning a stag's horn and making the ashes into a paste with wine ; this was considered very efficacious for beasts and men alike (xviii. 5, 3 ; xix. 5, 4).

8. *The virtues of herbs.*

The herb-garden was an important thing to a people who ate a great deal of salad and lived long before the days of synthetic drugs, which in our time have ousted so many of the old remedies. To comment adequately on all that is

said about herbs and vegetables of sundry kinds would exceed my powers ; there is a good field here for anyone sufficiently acquainted with the ancient tongues, folklore, botany and pharmacology and possessed of leisure and industry. Let him write a history of the medicinal and magic uses of herbs from the earliest written records down to the coming of the modern remedies, and he will find no lack of interest for himself or his readers. Laurel ranks high among healing plants. If the water supply is bad, it may be made wholesome by steeping laurel in it (ii. 7, 4). If sprigs of it are laid in a corn-field, they draw the " rust " away from the corn to themselves (Apuleius in v. 33, 4). They also are useful " by antipathy " to keep thunder away from wine-jars (vii. 11 ; cf. the statement of Pliny, *N.H.* xv. 135, that the Emperor Tiberius used to wear a laurel wreath as protection during thunderstorms ; more examples will be found in Fiedler, *op. cit.*, p. 85). Some, however, used iron for the same purpose (*ibid.*), clearly not as a sort of lightning-rod but to drive the thunder away by its magical powers. Being sacred to Apollo (because, explains the author, Apollo is the sun and laurel has a great deal of fire in it), it will keep away demons, and also, what is evidently thought of as a sort of possession, epilepsy (xi. 2, 4 and 7). Chopped up and boiled in water it makes a wash with which flies, especially gad-flies, may be kept off from cattle (xvii. 7, 1 ; xviii. 11). Ivy also had its uses ; a vine, if the labourer who pruned it was wreathed with ivy, would bear well (v. 24, 1) ; naturally enough, for ivy is Dionysos' plant. Three bunches of the berries of " black " ivy, put into a linen cloth and worn for three days, would cure the spleen (Damegeron in xii. 30, 4). A further service it would do a vine was, if wreathed around its stem, to attract beetles to its shadow, when they could be easily caught and killed (xiii. 16, 4). So common a plant as cabbage was credited with remarkable powers—an idea which is found likewise in the elder Cato (who no doubt, despite his expressed enmity to Greeks, was drawing on

Greek sources here).³¹ It has a natural antipathy to the vine and its products ; hence it must by no means be planted in a vineyard lest it ruin the vines (v. 11, 3, cf. xii. 17, 18). It sprang from the tears of Lykurgos, Dionysos' enemy (xii. 17, 17), hence its anti-vinous character. So strong is the antipathy that if anyone suffers from a swollen uvula, cabbage is an excellent remedy, for it will check the growth of anything which even suggests a grape by its name (xii. 17, 19). The dislike is mutual, for even a very few drops of wine thrown into boiling cabbage will stop it from boiling and spoil its colour (v. 11, 3), and a growing vine, if there is cabbage anywhere near it, will turn aside and refuse to grow in that direction (*ibid.* 4). Naturally, if eaten it will prevent drunkenness (vii. 31, 1), which desirable effect can be produced also by eating a goat's lung roasted, or five or seven bitter almonds, or wearing a wreath made of a shrub called *chamaipitys* or ground-pine (*ibid.*).³²

But even cabbage will hardly bear comparison with mallow (xii. 12), for this precious herb will, it appears, cure coughs, constipation, inflamed wounds, sprains, fractures, bruises, the bites of spiders and snakes, lichen, diseases of women, ear-ache, epilepsy, liver and kidney troubles, sciatica, retention of urine, and relieve difficult labour ; for some of which purposes it is applied externally, for others taken internally, alone or in conjunction with other ingredients. Lettuce is likewise wholesome in various ways, and is a noted antaphrodisiac ; in the healthy it induces sleep, and can be made to do the same for the sick, if proper precautions are taken ; it must be put under the bed without

³¹ Cato, *de agricultura*, clvi, 1 ; see also Pliny, *N.H.*, xxiv. 1 and xx. 84. The underlying principle of the antipathy was apparently the supposed dryness of cabbage.

³² So far as the bitter almonds are concerned, we can trace the recipe back through Athenaios (52 d) to Plutarch (*quaest. conuiu.* i. 624 c). This is merely a sample of the debt of the *Geoponica* to learned, not popular, tradition.

the patient's knowledge, and to get the best results, it should be gathered before sunrise with the left hand ; but it answers very well to lay one, three or five leaves under his pillow, the stalks pointing towards his feet (xii. 13, 6 and 15), or to rub the juice on his forehead (*ibid.* 7). A gourd has its uses in medicine also ; if a baby is feverish, lay gourds of the same length as the child in his cradle, and he will be cured at once, for the gourds will attract the fever to themselves (xii. 19, 10). Radishes are especially useful as a prophylactic against the bites of all venomous creatures (xii. 22, 5-6), three leaves of wild rocket, gathered with the left hand, will cure jaundice (xii. 26, 3) ; cardamums sharpen the wits of those who eat them (xii. 27, 2). On the other hand, turnips will not cure any disease of man, though they make a good poultice for a beast that has been bruised (xii. 21) ; mint is worse than useless, for it is an irritant, and also will prevent rennet from curdling milk (xii. 24), and wild rue is " by nature hostile to women with child," and causes them to miscarry if they drink a decoction of its fruit for fifteen days (xii. 25, 2). Basil also is so inimical to women that no woman will touch fish if, unknown to her, a sprig of basil with the root adhering is laid under it (xi. 28, 3). Sorrel, on the other hand, will cure her of barrenness if worn on the left arm (xii. 38). So much for a sample of the herbal lore then current.

9. *Popular natural history.*

I have included here a selection of the rather unnatural properties ascribed to sundry plants and animals, and supported by references to a long line of authors. Ultimately, popular beliefs may be at the root of these curious ideas, but once more it is to be remembered that the sources of the *Geoponica* did not get their information from the folk, but from libraries.

(a) *Vines.* I have already had occasion to mention several beliefs connected with this important object of the

ancient agriculturalists' skill ; I now note the rest. Wine was much used in medicine, and it was held that its efficacy could be much increased by special treatment of the vine itself. Florentinus (iv. 8, 2, *sqq.*) recommends that in planting vines some two or three inches of the slip to be planted should be slit open, the pith extracted and the place filled up with an antidote to snake-poison, or, if it is desired that the wine should be cathartic, with hellebore. This is but one of several attempts to affect the fruit of a plant by doing something to the pith ; it was held that a peach-tree, for example, could be made to bear stoneless fruit if a hole was made through the middle of the stem, cutting through the pith, and a peg of willow or cornel inserted (x. 16 ; for similar recipes cf. x. 31, xii. 19, 1 and other passages). But to return to vines, a mixture of good sense and very intelligible sympathetic magic is the precept in iv. 2 ; having trained your vine on a tree (this, and not a trellis, was the usual ancient method of propping them), bury three goats' horns in the ground near by, sharp ends downwards, so that they may fill with rain-water ; thus the vine will be very fruitful. It may well be that any method of keeping the rain-water from flowing away too fast would be beneficial ; but the choice of receptacle is clearly dictated by the fact that the goat is fertile and is Dionysos' beast. While Vindanius would sow nothing in a vineyard, for the sensible reason that the vines need all that the soil can give them and their shade will hinder the growth of anything else, many would recommend planting beans and bitter vetches, since it was supposed that these would in some way protect the vines, especially against frost (v. 11, 1-2 ; 31, 4). White and black grapes were supposed to be antipathetic to each other, and so ought not to be trodden, or even grown together (v. 15, 5-6). To try to prevent mildew by fumigating the vines or other plants endangered is reasonable enough ; but the choice of materials for the fumigation is hardly scientific, since it includes such magical

stuff as the left horn of an ox, three crabs, and the kind of fish known as *silurus* (v. 33, 1, 2, 6).

Once the vintage was over and the wine pressed, new precautions had to be taken to keep it from souring. It was important to choose the right day for racking it off from the vessels in which it had fermented into the smaller store-jars. There should be no constellation rising, for wine "moves" then, especially if roses are flowering or vines sprouting at the time; the light of both sun and moon should be kept away from the wine; the north wind should blow, or at all events not the south, when the transferring, or even the tasting, of the liquid took place; the day of full moon must by all means be avoided, for that is when wine turns to vinegar; the correct lunar dates were when the moon was waxing and under the earth, or, according to Sotion, the three days before the new moon appears (vii. 5-7; cf. vii. 10). A good way to prevent wine souring was to put a vine-root into it when new (vii. 12, 18). If at vintage-time a snake was seen coiling about a vine, the wine would certainly go sour (vii. 15, 7). If the wine was "poisoned by the venom of some creature," *i.e.*, apparently, if a snake or the like had got into it, the vintner might put matters right by dropping in a loaf of bread warm from the oven (bread is by no means without magical effects, for we are informed, ii. 33, 4, that any kind not made with ordinary leaven, including soda-bread and that which is made with a ferment prepared from grape-juice, is decidedly aphrodisiac), or equally well by using an iron ring (vii. 27). If it was desired, on the other hand, to destroy the wine utterly (*οἶνον ἀφαιρῆσαι*), this malicious end could be achieved by chewing radish and spitting the juice into the wine (vii. 29). This is one of the few bits of harmful magic in the *Geoponica*; the only others I have noted are: (a) x. 67, which gives several ways of killing a tree. The operator may chew raw beans and, still holding them in his mouth, bite a twig of a hazel-tree; it will then dry up. Or he may

kill any tree by driving a hot nail into its root ; a peg of tamarisk-wood driven into an augur-hole will have the same effect. Finally, the tree may be destroyed by digging down to the root and laying in contact with it either dittany, beans, or a rag stained with menstrual blood. (b) xii. 11 (Africanus), "To harm a gardener ; dissolve goose-droppings in brine and sprinkle on his vegetables."

The wine having been satisfactorily prepared and brought to table, the next business was to avoid drunkenness, an offence not very common in either ancient or modern Greece. I have already mentioned some methods of prevention ; cures for a drunkard were to put sap from vine-prunings in his drink, when he would lose all desire for wine (vii. 32) ; to dose him with vinegar, to give him radishes or cakes to eat, or most charming of all, to engage him in "questions concerning and relations of old tales." A wreath of many-coloured flowers put on his head was also recommended (vii. 33). As to the causes of drunkenness, they were two, firstly wine and secondly water (vii. 34). This latter statement, which its author admits sounds extraordinary, is explained when we note that according to Theopompos³³ the water of Lynkos in Epeiros had the property of intoxicating those who drank of it.

(b) *Olives*. Not much is to be recorded here : an olive-tree will not cast its fruit if one finds a bean with an insect in it, stops up the hole with wax, and then digs up a sod from the root of the tree and buries the bean under it (ix. 12 ; Demokritos). It is pure sympathetic magic ; as the insect cannot get out again, so the olives cannot get away from the boughs. Olive oil is best kept in glass vessels, for glass is by nature cold and so will preserve it well (ix. 19, 10). The growing tree has the property, which it shares with the lime, elm and white poplar, of predicting the summer

³³ Cited by Antigonos, *Hist. mirab.*, 164 (180), p. 99, 15 Westermann ; Sotion, frag. 20 (p. 185, 22 Westermann) ; Athenaios 43, d ; cf. Pliny, *N.H.*, ii. 230.

solstice (τροπαὶ or turnings of the sun as it is called in Greek) by its leaves turning over (ix. 2, 3); and being by nature pure, it should never have its crop gathered by any but chaste persons; in one district of Kilikia it is said that excellent results are got by having all the work done by innocent boys (*ibid.* 5-6).

(c) *Other trees.* In planting date-stones, be sure to point the sharp end of the stone to the east (x. 4, 1). Citrons need protection in winter, and the best covering for them is the leaves of the κολοκύνθη,—some kind of gourd, either *Cucurbita maxima* or *Citrullus colocynthis*—because this has a “natural reaction” (φυσικὴ ἀντιπάθεια) which tends to guard it from cold (x. 7, 4). Pistachio nuts are male and female, and have sexual organs; they should be sown in pairs with these organs touching, the male nut having its back to the west (x. 12, 1). To get any pattern you fancy on peaches, almonds or figs, trace the design with a bronze stilus on the seed in the first two cases, the graft in the third, and the fruit of the tree, when ripe, will show it (x. 14; 47; 60). Fruit may be coloured in various ways, as by planting roses near its tree, to get a red colour, or soaking the seed (a peach-stone for instance) in a dye of the required shade (x. 15; 19, 3). The pomegranate and the myrtle have such an affection for each other that their roots will entwine even if they are not set very near, and both will flourish exceedingly (x. 29, 5; 37, 3). To keep a hazel-tree from casting its nuts, hang around it a mullein-root and a bit of red cloth soaked in manure (x. 64, 6). In grafting, take the grafts from the left-hand side of the parent tree, for the yield will then be doubled (it is not said which side was to be regarded as the left, *i.e.* which way the operator was to face), x. 77, 8. A young plant ought to have superfluous leaves plucked off by hand, not cut with a knife, for it paralyses it to touch it with iron (x. 81, 3; Vergil gives the same precept, *Georg.* ii. 366, but without the reason). In planting cypresses, sow barley alongside, for the tree will

grow in its first year as high as the barley does (xi. 5, 2). Observe the kermes-oak, for if it bears a heavy crop, the harvest will be a failure (xi. 14). In transplanting any tree, be sure it is set in the same relation to the points of the compass as it originally had (x. 85, 3). This also is a Vergilian precept, *Georg.* ii. 269 *sqq.*

(d) *Lesser plants.* The relations of these to one another are often of a kind unknown to the modern botanist. Thus, cabbage has a close connection with both radish and turnip ; its seed, when old, will produce radish ; if three years old it yields turnip, and three-year-old turnip seed will in like manner come up cabbage (xii. 17, 22 ; 21). The growth of asparagus can be much encouraged by pounding up rams' horns small, sprinkling them on the beds, and watering ; but " some make the rather surprising statement that a whole ram's horn, if bored through and planted, will produce asparagus " (xii. 18, 2-3). Plants of the gourd kind are best protected against insects if shoots of marjoram are set beside them while they are small (xii. 19, 9) ; rocket will benefit any potherbs if sown alongside them (xii. 26, 3). To make celery curly, pound and roll its seed gently before sowing it (xii. 23, 2). To get prize leeks, first sow them in a nursery ; then, when you transplant the young leek, make a hole in the top of it (not with any iron implement ; a wooden shuttle or a sharp reed is recommended), and insert a quantity of leek-seed. This will combine, and the whole will grow into one very large and fine specimen (xii. 29, 3). Garlic may be sweetened by planting olive-stones with it (xii. 30, 8). Artichokes will have no prickles if the seed be inserted before sowing into the cuts of a lettuce-root stripped of its leaves and chopped ; and they will be sweet if the seeds are steeped in milk and honey and then dried before sowing (xii. 39, 7 and 9). Squills, besides their various virtues, serve as a means of foretelling the harvest, for if their flower is long (" like a stick ") and does not soon fade, the crops will be good (xii. 37).

(e) *Animals*. Nothing very remarkable is said in this connection, merely a few stock fallacies being repeated from older writers. "Aristotle" is the authority given for the statements that the smell of roses kills beetles and that of myrrh, vultures, also that vultures conceive by flying into the south wind (xiii. 16, 3; xiv. 26). The former "fact" is from pseudo-Aristotle, *On remarkable reports*, 147; as to the second, the real Aristotle knew quite well how real vultures breed, as may be seen from *Historia animalium*, 563a, 5 sqq., 615a, 8-11. A little likelier to be true is the statement of Africanus that frogs will stop croaking at night if a light is set on the bank of the water they are in (xiii. 18). The goat has always been a favourite subject for speculations of this kind; it was a generally accepted fact in antiquity that it is always feverish, and this statement recurs in xviii. 9, 5, with the addition that if the fever ceases, the goat dies. On the other hand, it is most intelligent, as shown by the fact, vouched for in xviii. 18, 3, that if its sight grows dim it walks into a patch of sharp reeds and there deliberately bleeds itself. Concerning hares, the usual statement is made (xix. 4), that they are of alternating sex, the same individual being now male and now female.

10. *Miscellaneous*.

I conclude with a few stray oddities. "Zoroaster" knows a method of forecasting the harvest (ii. 15). Twenty to thirty days before the beginning of the dog-days, sow a few small patches of different seeds; when the dog-star rises, that is on July 19, these patches will have sprouted sufficiently for the experiment, if well watered. It will be observed that some are damaged and others not; the results of the harvest will be accordingly. The best days for threshing are from June 23 to the end of the month, and again from August 1 to 24, for there is never any rain or dew then (iii. 6, 8; 11, 9). A good corn harvest means a good vintage (v. 43, 2). Dew gathered from roses with a

feather is an excellent remedy for sore eyes ; Zoroaster recommends rubbing the eyes with three rosebuds, as soon as they begin to open, without removing them from the bush. This will prevent sore eyes for a whole year (xi. 18, 6). Basil not only makes those who eat it insane or lethargic, but if chewed and spat out in the sun, will breed scorpions (xi. 28, 1 and 3) ; hence the wisdom of goats is once more shown in that they will not eat it (*ibid.* 2). An old acquaintance meets us in xix. 7, 6-7, where water in which live coals have been quenched (cinder-water; the coals should be tamarisk) is recommended to cure pigs of the spleen. A red-hot iron may be used if the patient is human, and the water mixed with wine or vinegar.

There are a few mythological tales inserted in the eleventh book ; some of them combine pure pagan sentiment with Byzantine rhythm, and all are, of course, late. In 2, 1-4 comes the familiar story of Daphne and Apollo ; 2, 8 mentions the finding of a laurel on the Palatine by Latinus when he built the first settlement there. Cypresses are the daughters of Eteokles (which one is not stated ; the name belongs to two or three mythological characters), who fell into a well while dancing in honour of " the goddesses " and were transformed by the Earth-goddess, xi. 4, 2. Myrtle was once a girl called Myrsine (*i.e.* Myrtle), an Athenian, the most beautiful girl in Attica and also stronger than any of the young men. She naturally took an interest in athletics, and used to give garlands to the victors. Being murdered by some who were dissatisfied with her decisions in favour of their opponents, she was turned into the plant which bears her name and is still used for wreaths (xi. 6). xi. 10 is the usual tale of the pine-nymph Pitys who was loved by Pan. In xi. 15 we have the tale of the frankincense-tree ; it was once a pious young Syrian, who was murdered by certain godless wretches and turned into the tree which still bears his name (λίβανος) by Earth. In xi. 17, the usual story is told of how roses were once all white, but some were

coloured red when Aphrodite scratched herself on their thorns in running to the wounded Adonis. But others say, the author adds, that Eros spilled a mixing-bowl of nectar, which thus rained down from heaven and coloured the roses. Lilies (xi. 19) were produced at the same time as the Milky Way. When Hera suckled Herakles, some of her milk fell on the heavens and became the Galaxy, but some fell on the earth and lilies sprung from it. Gilliflowers or violets (*la*) were produced by Earth for Io to feed on when she was turned into a heifer (xi. 22). In xi. 24, the familiar legend of Narkissos is told once more. It may reasonably be concluded that these stories, when not known from other sources, are of highly dubious authority.

H. J. ROSE.

SUPERSTITIONS.

FOOTBALL folks are very superstitious. Were they not life would be duller than it is. Directors seem to think that certain people bring them luck on the field, and players are believers in mascots. If a black cat, quite a stranger, walked into the dressing-room on the day of a match the players would stroke and pet it, provide it with milk, and almost worship it. Players believe in charms.

By the aid of Aladdin's lamp which was really a pantomime "property" at Leeds, there is no doubt whatever in the minds of some who have faith in false gods that Huddersfield Town reached the Final Tie for the Cup in 1919-20, and gave the Aston Villa team such a fright that Andrew Ducat and his henchmen will never forget it.

This lamp involved secret incantations and processions in the dressing-room before every tie; 'twas almost like Obeah worship. But all the rites, ceremonies and witchcraft failed in the extra half-hour.

No doubt the lamp was perfect, but it was the human machinery which broke down, even if the team did not meet a funeral, or a squinting beldame, on the way to Stamford Bridge.

This train of the occult has obtruded itself not because I